ABSTRACT OF THE DISCLOSURE

Methods to reduce the write time for forming mask patterns having angled and non-angled features using electron beam lithography are disclosed. In one exemplary embodiment, non-angled features of the mask pattern are formed by exposure to an electron beam. The orientation of the substrate and a path of the generally rectangular-shaped shot from the electron beam may be relatively altered such that the substrate is exposed to the electron beam to form the angled features as if they were non-angled features. In another exemplary embodiment, the electron beam lithography system determines whether it is necessary to relatively alter the orientation of the substrate and a path of the generally rectangular-shaped shot from the electron beam to form the angled features based on the number of angled features and the time required for relatively altering the orientation. Electron beam lithography systems employing a rotatable stage, rotatable apertures, or both, are also disclosed.

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